

REMARKS

Claims 1-18 are pending after entry of this paper. Claims 1-18 have been rejected. Claim 12 has been amended to correct a clerical error; no new matter has been introduced. Reconsideration and withdrawal of the pending rejections in view of the below remarks are respectfully requested.

Response to Rejections under 35 U.S.C. §103

Claims 1-18 have been rejected under 35 U.S.C. §103(a) for allegedly being obvious over U.S. Patent No. 4,437,651 to Cordier et al. (“Cordier”). Specifically, the Examiner contends that Cordier teaches all the elements of the claims except for that the housing is made of copper and the dimensions of the groove, and that both would have been obvious to one of ordinary skill in the art. Applicants respectfully disagree, and assert that Cordier is deficient in other respects.

Cordier is directed to a cooling plate for blast-furnaces. Cordier discloses that the cooling plates are cast iron elements within which flows a cooling fluid (col. 1, lines 17-19). Cordier discloses that the cooling plate is substantially parallelepipedic in shape (col. 1, lines 58-60), and that it has a “waffle shape” obtained at the crossing of longitudinal and transverse grooves (col. 2, lines 25-31). Cordier suggests that the waffle shape of the grooves “performs the function of mechanical anchoring of the refractory lining inside the blast-furnace.” Cordier is silent as to the dimensions of the grooves.

The structure of the cooling plate as illustrated in Figures 1 and 2 of Cordier clearly does not allow for the refractory lining to move in a vertical direction (due to trapezoid

12 protruding from transverse groove **11**). In contrast, the cooling element as recited in the instant claims is such “that the lining element can move in the vertical direction with respect to the housing.” As recited in the instant specification, this arrangement is such that “transversal movement cannot occur, because the grooves are positioned in the vertical direction” (page 4, lines 10-11). Thus, Cordier neither explicitly teaches nor suggests to one of ordinary skill in the art each and every element of the claims, specifically that “the lining element can move in the vertical direction with respect to the housing.”

Additionally, Cordier does not teach that the housing of the cooling plates are “made of one single piece,” which is an element of the claims. As described in the instant specification, “cooling elements made of several pieces contain a lot of horizontal seams where harmful leakages may occur” (page 2, lines 5-6). Cordier neither explicitly teaches nor suggests to one of ordinary skill in the art the construction of a housing “made of one single piece.”

For the foregoing reasons, applicants respectfully submit that independent claims 1 and 17 are patentable over the art of record. Applicants further submit that for at least similar reasons as to why independent claims 1 and 17 from which all of the dependent claims 2-16 and 18 depend are believed allowable, the dependent claims are also allowable. The applicants however, reserve the right to address any individual rejections of the dependent claims and present independent bases for allowance for the dependent claims should such be necessary or appropriate.

Furthermore, with specific reference to claims 6-8, the Examiner contends that the dimensions of the groove would have been obvious to one of ordinary skill in the art, since this depends on the size of the liner to place therein. Applicants respectfully disagree. As recited in the instant specification, “[b]y using these dimensions, there is achieved a cooling element that is

functional and advantageous from the production technical point of view” (page 4, lines 23-35, emphasis added). This would not have been obvious to one of ordinary skill in the art. Thus, applicants submit that claims 6-8, which recite groove dimensions, are further distinguishable from the art of record.

Thus, applicants request reconsideration and withdrawal of the rejections over Cordier.

CONCLUSION

Based on the foregoing remarks, applicants respectfully request reconsideration and withdrawal of the rejection of claims and allowance of this application. Favorable action by the Examiner is earnestly solicited.

AUTHORIZATION

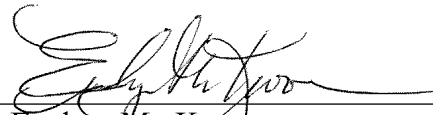
The Commissioner is hereby authorized to charge any additional fees which may be required for consideration of this Amendment to Deposit Account No. **13-4500**, Order No. 4819-4734.

This paper is believed to be timely filed. In the event that an extension of time is required, or which may be required in addition to that requested in a petition for an extension of time, the Commissioner is requested to grant a petition for that extension of time which is required to make this response timely and is hereby authorized to charge any fee for such an extension of time or credit any overpayment for an extension of time to Deposit Account No. **13-4500**, Order No. 4819-4734.

Respectfully submitted,
MORGAN & FINNEGAN, L.L.P.

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By:


Evelyn M. Kwon
Registration No. 54,246

Correspondence Address:
MORGAN & FINNEGAN, L.L.P.
3 World Financial Center
New York, NY 10281-2101
(212) 415-8700 Telephone
(212) 415-8701 Facsimile